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Determination of the Correlation Between Nutritional and Socio-Economic Status of Under-Five Children in Lusaka District

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Abstract: *Malnutrition is a global problem, which contributes to high levels of morbidity and mortality especially in developing countries. It is a significant public health problem which affects many developing countries. Therefore, it is important to assess the under-five nutritional status as it is a significant sign of household living standard. The study employed a descriptive cross sectional design which was used to determine the correlation between nutritional and socio-economic status of under-five children. This study revealed variations of the nutritional status among the under- five children and illustrated that there was a significant relationship between socio-economic variables with wasting and underweight.*

Keywords: *Nutrition, Social-economic, Lusaka, Underweight, Stunting*

1. Introduction

Malnutrition is a global problem, which contributes to high levels of morbidity and mortality especially in developing countries. It is a significant public health problem which affects many developing countries. According to UNICEF-WHO and World Bank Group (2012), chronic malnutrition has been a worldwide and continuous problem among children under the age of five. Malnutrition is also responsible for elevated levels of short height for age (stunting) in most countries. The recent Zambia Demographic Health Survey (2014) described malnutrition as 40 percent for stunting, 6 percent wasting and 15 percent for underweight. Therefore, it is important to assess the under-five nutritional status as it is a significant sign of household living standard. Household living standards include income earnings through different productive activities.

2. Methods

2.1. Study Type

Quantitative and qualitative approaches were used in collecting and analyzing primary data. Quantitative data was collected through a community/household survey. The study employed a descriptive cross sectional design which was used to determine the correlation between nutritional and socio-economic status of under-five children in Lusaka district (Mtendere, Helen Kaunda and PHI). Cross sectional study is a type of observational study where data from a population, or a representative subset/sample is gathered and analyzed at a specific point in time. In-depth interviews (qualitative approach) were also conducted and used to triangulate data from the quantitative survey. This study was carried out in 2017.

2.2. Sampling/Approach

The household survey s used a multi-stage sampling method. Therefore, the first stage sampled the district purposively. The second stage also purposively sampled the compounds and stratified the sampled residential areas as high, mid and low of the three residential areas (Mtendere, Helen Kaunda and PHI). The third stage systematically sampled the households from the compounds by picking one house every after five houses. The fourth stage had a list of individual respondents who were the guardians of the under-five children from the selected households where children came from. Hence a total four hundred and six (406) households were interviewed. In-depth interviews were also conducted with local leadership who included, Church leaders, Clinical Nutritionist and local government officials.

2.3. Data Analysis

Qualitative and quantitative data was generated for each of the variables under study. The under-five children were categorized in ages. The two by two tables were generated to show the relationship between nutritional status of the under-five years old and the independent variables. Further, Pearson Chi square was used to prove the relationship between socio-economic status and child nutritional status. The quantitative data was analyzed using SPSS while the Qualitative data was analyzed by using content analysis

3. RESULTS

Table1. *Factors Associated with Nutritional Status as Measured by Weight for Age (N=406) among under- five Children*

Factors Associated with Nutritional Status as Measured by Weight for Age (N=406)			
Variable	**Underweight (n=50)**	**Not Underweight (n=356)**	**Chi square; p-value**
Residence			
PHI- Low density	7 (14.0%)	118 (33.1%)	**P = (0.000)**
Helen Kaunda- Medium Density	10 (20.0%)	111 (31.2%)	df =2
Mtendere-High Density	33 (66.0%)	127 (35.7%)	X^2 =17.290[a]
Employment Status			
Not Employed	39 (78.0%)	167 (46.9%)	**P = (0.000)**
Employed	11 (22.0%)	189 (53.1%)	df =1
			X^2 =16.955[a]
Toilet availability			
Yes	38 (76.0%)	319 (89.9%)	**P = (0.005)**
No	12 (24.0%)	36 (10.1%)	df =1
			X^2 =8.058[a]
Household income			
Below K1,000	30(60.0%)	145(40.7%)	**P = (0.027)**
Between K1,000 - K5,000	19(38.0%)	187(52.5%)	df =2
Above K5,000	1 (2.0%)	24 (6.7%)	X^2 =7.201[a]
Education Level			
No education	22(44.0%)	17 (4.8%)	**P = (0.000)**
Primary	18(36.0%)	87(24.4%)	df =2
Secondary and Above	10(20.0%)	252(70.8%)	X^2 =90.012[a]
Source of water			
Borehole	7 (14.0%)	22(6.2%)	**P = (0.000)**
Well	12(24.0%)	19(5.3%)	df =2
Taps/Piped water	31(62.0%)	315(88.5%)	X^2 =27.361[a]
Type of toilet			
Flushable Toilet	20(40.0%)	207(58.1%)	**P = (0.000)**
Pit Latrine	22(44.0%)	137(38.5%)	df =2
Open pit toilet	8 (16.0%)	12(3.4%)	X^2 =17.118[a]

** P value, value for which <0.05 is significantly associated.*

The results illustrated the association between nutritional status which is underweight of under-five children and different socio-economic variables which were place of residence, education of parents, types of toilet, toilet availability, sources of water, and education level of the parent/ caregiver, employment status and household income (Table 1). Statistically, underweight was significant related with the variables like: place of residence with (P= 0.000), types of toilet with (P=0.000), toilet availability with (P=0.005), sources of water with (P=0.000) and education level of the parent/ caregiver with (P=0.000), employment status with (P=0.000) and household income with (P=0.027) (Table 1). Further, the association between nutritional status which is wasting of the under- five children and socio-economic variables like; place of residence, education level of the parents/ caregiver, employment status, sources of water, toilet availability and type of toilet and household income was established (Table 2). Statistically,

wasting was significant related with the variables like: place of residence with (P=0.033), education level of the parents/caregiver with (P=0.000), employment status (P=0.001), sources of water with (P=0.000), toilet availability with (P=0.000). Table 2 also showed that there was no statistically significant relationship between household income and wasting (P=0.464), type of toilet and wasting (P=0.215) (Table 2).

Table2. *Factors Associated with Nutritional Status as Measured by Weight for Height (N=406) among under-five Children*

Factors Associated with Nutritional Status as Measured by Weight for Height (N=406)			
Variable	**Wasted (n=30)**	**Not Wasted (n=376)**	**Chi square; p-value**
Residence			
PHI- Low density	4(13.3%)	121(32.2%)	**P =(0.033)**
Helen Kaunda- Medium Density	8(26.7%)	113(30.1%)	df =2
Mtendere-High Density	18 (60.0%)	142 (37.8%)	X^2 =6.798[a]
Employment Status			
Not Employed	24 (80.0%)	182(48.4%)	**P = (0.001)**
Employed	6 (20.0%)	194 (51.6%)	df =1
			X^2 =11.097[a]
Toilet availability			
Yes	18 (60.0%)	339 (90.0%)	**P = (0.000)**
No	12 (40.0%)	36 (9.6%)	df =1
			X^2 =24.572[a]
Household income			
Below K1,000	16(53.3%)	159(42.3%)	**P = (0.464)**
Between K1,000 - K5,000	12(40.0%)	194(51.6%)	df =2
Above K5,000	2 (6.7%)	23 (6.1%)	X^2 =1.536[a]
Education Level			
No education	14(46.7%)	25 (6.6%)	**P = (0.000)**
Primary	4 (13.3%)	101(26.9%)	df =2
Secondary and Above	12(40.0%)	250(66.5%)	X^2 =51.305[a]
Source of water			
Borehole	4 (13.3%)	25(6.6%)	**P = (0.000)**
Well	10(33.3%)	21(5.6%)	df =2
Taps/Piped water	16(53.3%)	330(87.8%)	X^2 =33.620[a]
Type of toilet			
Flushable Toilet	13(43.3%)	214(56.9%)	**P = (0.215)**
Pit Latrine	14(46.7%)	145(38.6%)	df =2
Open pit toilet	3(10.0%)	17(4.5%)	X^2 =3.075[a]

** P value, value for which <0.05 is significantly associated.*

4. Discussion

This study revealed significant findings related to the nutritional status of under-five children. It generally revealed that most children were well nourished which can be due to quality care and health which is reinforced by other socio-economic factors that influenced adequate nutrition among most households in the three study areas.

This community based survey also revealed that among the malnourished, Mtendere had the highest number of under- five children who were wasted and underweight compared to PHI and Helen Kaunda. Mtendere is a high density area coupled with low socio-economic status which affects children's nutritional status. Similarly, this finding corroborates with a study done by Motbainor et al. (2016) in Ethiopia that showed a significant association between residential area and under nutrition. In their study, they did not examine nutritional status within suburban setting; instead they only differentiated between urban and rural settings. In the current study, suburban areas were examined, and the outcome could be due to the fact that parents in the high socio-economic areas with low density settings have access to nutrition information that is given

through different media on child care and feeding.

This current study found out that the difference in the socio-economic status existed across the three selected areas. It was observed that there was a variation in the educational level of respondents among the selected areas of which Mtendere had the most illiterate care givers and the highest proportion of parents who lived below K1000 per month compared to PHI and Helen Kaunda. Thus, the poor educational background of parents in Mtendere could have contributed to their poor knowledge of the nutritional requirements of their children, while their low economic status makes it difficult for them to contribute meaningfully to the family income, with the consequent inability to purchase some of the basic food needed by their children. Similarly, a study by Omondi (2016) recognized low earnings and illiteracy as being the determinant of stunting, wasting and underweight.

Furthermore, it was also evident that among the studied areas PHI was considered as an area of low density, and as such most households were with literate parents who had household income level between K1000-K5000 per month, and a few with household income above K5000 per month. Besides, the majority were in gainful employment which also explains the reason behind its better nutritional status in under-five children.

Further the findings showed that the high density area had majority respondents that were unemployed and most households that were food insecure which could have been the main cause of malnutrition among under- five children. These findings were further supported by the views of the local leadership;

"Unemployment, leading to little or no income therefore, making households with little or no food which leads to poor feeding habits like feeding children with a lot of carbohydrate foods compared to meat and vegetables". Ward Counselor, 48, Mtendere. IDI 001 Code.

In addition, the study also showed that high unemployment levels among the parents of the under -five children were found in Mtendere, and this affected household food choices leading to poor nutrition in children from this high density area. These findings were supported by the views of the health worker;

"Most of the household heads lack employment which leads to poor choices of food for the children and household, it also leads to families to skip meals or rather eat once a day which affects children's nutritional status". Nutrition Technologist, 32, Mtendere Health Center. IDI 002 code.

It was evident that toilet availability was one of the important factors in the assessment of child nutritional status. In this study, it was very noticeable that parents from high density area or Mtendere had more respondents with access to toilets compared with PHI and Helen Kaunda.

However, this could not translate to the quality of the nutritional status among the under-five children in Mtendere compared to Helen Kaunda and PHI as Mtendere was also found with the largest number of households without toilets. Despite Helen Kaunda and PHI having more households with flushable toilets which is perceived to be linked to low malnutrition levels.

The study revealed the associations that were either significant or not significant among some socio-economic factors with wasting and underweight of children under the age of five, and these factors included place of residence, education, sources of water, toilet availability, employment status and household income.

It was evident that the relationships that were significant were in agreement with the study by Mensah (2016) on the influence of socio-economic factors on nutritional status of rural children in Ghana. His study brought out information that establish, socio-economic parameters such as education, occupation, income levels and other socio-economic variables that are strongly associated with child nutritional status.

Our study also showed that sources of water and availability of toilets were important selected factors linked to the two indicators of nutritional status of under-five children across the studied areas. It was revealed that the nutritional status of children whose sources of water was from a borehole or well were more likely to be underweight as compared to those that had taps/piped water sources. Underweight increases in children coming from households which use borehole water sources, and decreases when taps/piped sources are used. This showed that sources of water had an impact on the children's' nutritional status. This relationship was evident for both sources of water and availability of

toilets at 5 percent significant level in relation to wasting. Similarly, a study done in Ethiopia by Ma'alin et al. (2016) found that toilet availability makes better communities with good sanitation that reduces the risks of infections among the children.

This study also revealed the differences in the nutritional status and socio-economic status among the three selected areas. It was revealed that Mtendere had the highest number of children who were underweight and wasted, (66) percent and (60) percent respectively. While among the well-nourished, Mtendere still revealed the highest number of children compared to Helen Kaunda and PHI. However, these variations did not seem to be greater compared to what was observed among the malnourished. The accountings of such differences are due to variations in samples across the three residential areas as well as having different socio-economic factors that would contribute to the nutritional status of the under-five children in these residential areas. As such, these results can be attributed to the fact that the differences in nutritional status are patterned along socio-economic strata occurring across the three selected areas. These findings are in line with studies in Ghana which revealed how incidences of malnutrition affected respondents with low socio-economic status as compared with those coming from a high or appreciable socio-economic status within the township (Mensah, 2016).

In addition, this study showed a very small proportion of the children that had acute malnutrition and most of these children actually came from a high density area which is Mtendere, whereas PHI and Helen Kaunda had less than 5 percent of under- five children with acute malnutrition. In other words, children drawn from Mtendere were more likely to be wasted or underweight compared to other two study areas as they are at high risk of suffering from acute malnutrition due to low socio-economic status. Similarly, BDHS (2014) found that children from the poorest household are at higher risks of becoming chronically malnourished compared to the children coming from the wealthy households.

Furthermore, it was also evident that among the studied areas PHI was considered as an area of low density, and as such most households were with literate parents who had household income level between K1000-K5000 per month, and a few with household income above K5000 per month. Besides, the majority were in gainful employment which also explains the reason behind its better nutritional status in under-five children. These findings were consistent with a study by Saaka and Osman (2013), indicated household with high socio-economic status to be positively linked with improved nutritional food access and variety of food, which is extremely important to improve the nutritional status of children.

Further the findings showed that the majority of the respondents who came from the high density area were unemployed and majority of the households were food insecure which could have been the main cause of malnutrition among the under- five children. These findings were also supported by the views of the local leadership;

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Contrary to the fact that piped water is a protective factor of malnutrition (Oyekale, 2012). Mtendere still had the highest number of malnourished children despite using piped water; this was because the area also had the highest number of households using unprotected boreholes and wells with untreated water which contributes negatively to children's' nutritional status compared to PHI and Helen Kaunda. In addition, piped water is usually treated and this has a positive relationship with nutritional status and improves under- five children's' health unlike untreated water from the wells and boreholes which is prone to contamination. We can further argue that even with piped water, Mtendere still has poor sanitation and hygiene that is negatively affecting nutritional status and promoting chronic malnutrition in under- five children because of being a highly density area.

5. Conclusion

This study revealed variations of the nutritional status among the under- five children and illustrated that there was a significant relationship between socio-economic variables with wasting and underweight. Only types of toilet and parent's household income had no significant relationship with wasting. Therefore, comprehensive national socio-economic developmental strategies should be considered in order to solve these problems in all areas affected by malnutrition in Zambia.

References

[1] Central Statistical Office. (2014). Zambia Demographic and Health Survey 2013-14. Preliminary Report, - 11-15, Lusaka, Zambia.

[2] Ma'alin, A., Birhanu, D., Melaku, S., Tolossa, D., Mohammed, Y., and Gebremicheal, K. (2016). Magnitude and factors associated with malnutrition in children 6–59 months of age in Shinille Woreda, Ethiopian Somali regional state: A Cross-Sectional Study. *BMC Nutrition 2*: 44. Retrieved from http;/doi.org/10.1186/s40795-016-0079-1.

[3] Mensah.M. (2016). Influence of socioeconomic factors on nutritional status of rural children at Akontompo in the Sekondi Takoradi Meropolis of Ghana. *International Journal of Home Science*, 2*(1)*, 31-36.

[4] Motbainor A, Worku A, Kumie A (2016) Stunting Is Associated with Food Diversity while Wasting with Food Insecurity among Under Five Children in East and West Gojjam Zones of Amhara Region, Ethiopia. PLoS ONE 10(8): e0133542.doi: 10.1371/journal.pone.0133542

[5] National Institute of Population Research and Training (2014). Bangladesh Demographic and Health Survey, 01. Retrieved from, www.dghs.gov.bd.

[6] Omondi. D. O.1 and Kirabira P. (2016). *Socio-Demographic Factors Influencing Nutritional Status of Children (6-59 Months) in Obunga Slums, Kisumu City, Kenya*, 6(2): 69-75DOI: 10.5923/j.phr.20160602.07

[7] Oyekale, A.S. (2012). Factors Explaining Acute Malnutrition among Under-Five Children in Sub-Sahara Africa (SSA). *Life Science Journal; 9*(4), 2101–2107

[8] Saaka M., Osman S.M. (2013). "Does household food insecurity affect the nutritional status of preschool children aged 6-36 months?", *International Journal of Population Research*, vol. 2013, Article ID 304169, P12. doi:10.1155/2013/304169

[9] UNICEF-WHO-The World Bank. (2012). UNICEF-WHO-World Bank Joint Child Malnutrition Estimates. Levels & Trends in Child Malnutrition. United Nations Children's Fund, World Health Organization and The World Bank., UNICEF, New York; WHO, Geneva; and The World Bank, Washington, DC.

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